Scan for Augmented Reality Explainer Videos:

(~1:30 min)

(~4 min)

The usability, feasibility, and acceptability of augmented reality for clinicians, family caregivers, and patients during home hospital: A simulation study

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Background

Home hospital provides hospital-level care in patients' homes as a substitute to the brick-and-mortar hospital.

The scalability of home hospital remains constrained by the need for highly trained personnel to be physically present in the home.

Augmented reality (AR) offers a potential upskilling solution to these limitations, enabling users to interact with digital content superimposed onto their real-world environment while simultaneously transmitting a first-person perspective to remote clincians.

Study Aims

- Evaluate the usability of head-mounted augmented reality during simulated home hospital clinical care.
- Assess the feasibility and acceptability of AR among clinicians, patients, and family caregivers.
- Characterize workload and workflow preferences across different AR-supported home hospital scenarios.

Methods

Home hospital professionals participated in simulated home hospital clinical scenarios serving as both remote and in-home clinicians using a head-mounted augmented reality device (Vuzix M400). Actors participated as simulated patients and family caregivers.

Table 1. Simulated home hospital clinical scenarios with AR-supported remote guidance

Clinical Task Scenario	Remote expert	In-home
Insulin injection training	Medic	Patient
Preparing nebulizer	Medic	Patient
POCUS	Physician	Nurse/ Medical Assistant
Incision and drainage	Physician	Nurse
IV flush	Nurse	Family caregiver
PleurX drainage	Nurse	Family caregiver

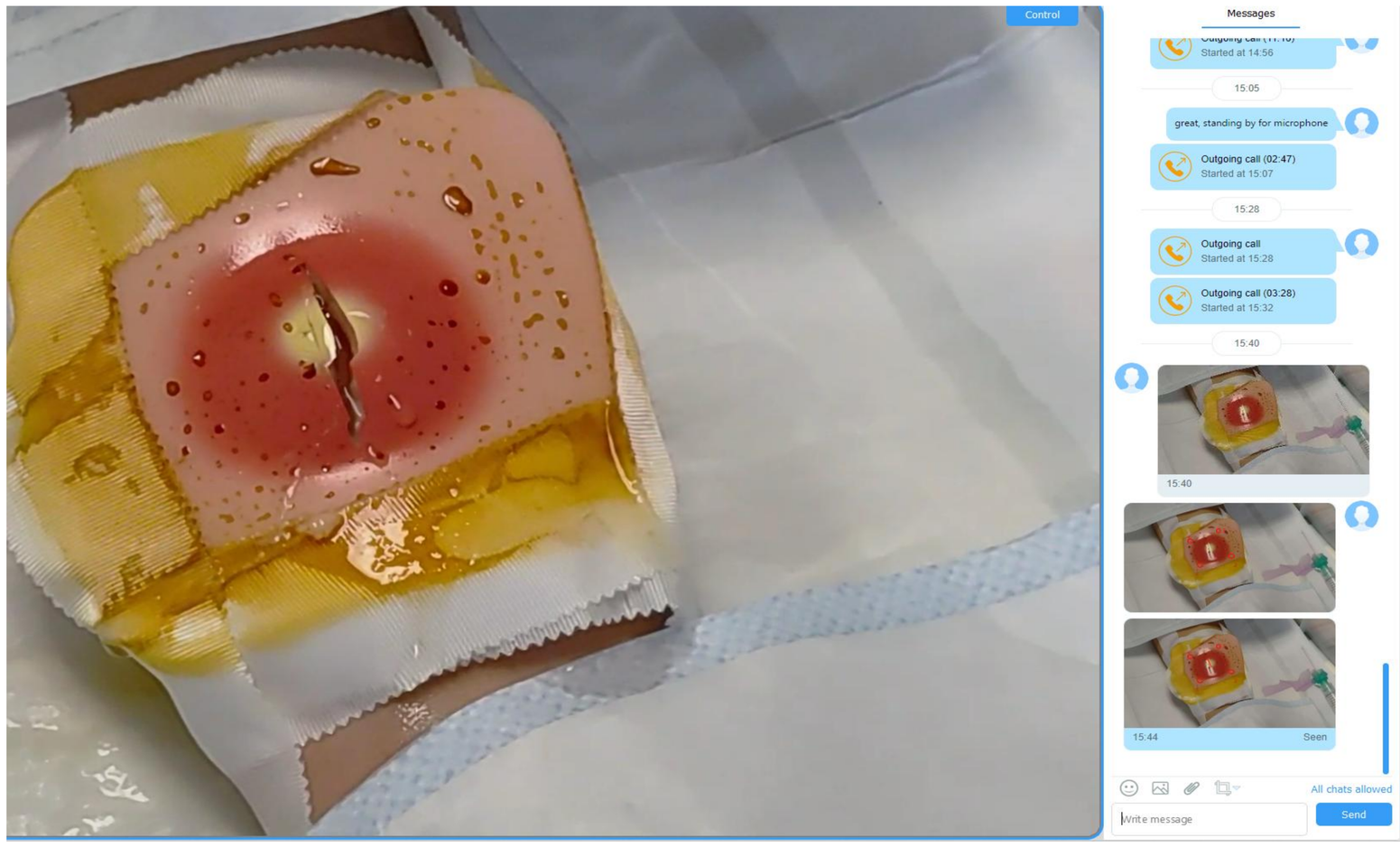


Figure 1. Screenshot of the Vuzix M400 video chat interface featuring Remote Expert View of the In-Home Clinician's First Person Perspective During Simulated Abscess Incision and Drainage. The main screen displays the live procedural field as seen by the remote clinician, while the panel on the right shows the communication/chat interface used to support real-time guidance during the procedure.

Results

Participants reported high usability, feasibility, and acceptability of AR, and modest overall workload with higher mental demand and self performance scores.

Usability (Health-ITUES)	● ● ● ● ○	**4.0/5**
Feasibility (FIM)	● ● ● ● ○	**4.0/5**
Acceptability (AIM)	● ● ● ● ○	**4.0/5**

NASA-TLX Perceived Workload

Self-performance	●---------- **16** *(IQR 3)*
Mental demand	●---------- **11** *(IQR 3)*
Effort	●----------**10** *(IQR 8)*
Frustration	●-------- **8** *(IQR 5)*
Physical demand	●----- **5** *(IQR 7)*
Temporal demand	●----- **5** *(IQR 6)*

Conclusion

With proper training, AR may hold particular promise as a clinician-facing tool within home hospital workflows, supporting communication, guidance, and collaboration between remote and in-home care teams.